J. A. Davis,

Steam-Boiler Water-Feeder,

No. 82,498, Patented Sep. 29, 1868.

Fig: 1.

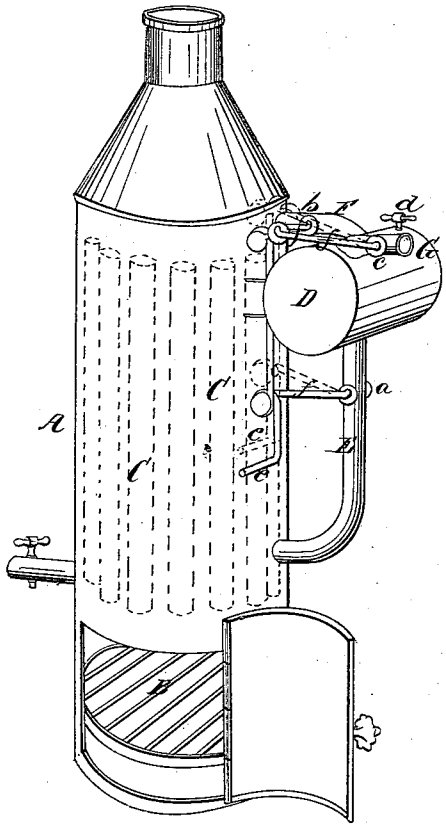
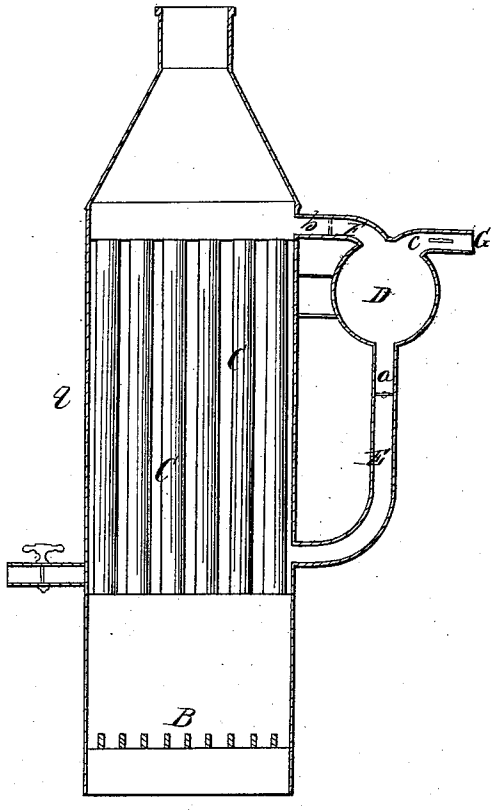


Fig: 2.



Witnesses:

John H. Napier

Inventor:

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United States Patent Office.

JOB A. DAVIS, OF WATERTOWN, NEW YORK.

Letters Patent No. 82,498, *dated September* 29, 1868.

IMPROVEMENT IN AUTOMATIC BOILER-FEEDERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOB A. DAVIS, of Watertown, in the county of Jefferson, and State of New York, have invented a new and improved Apparatus or Mechanism for Supplying Water to Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, and of its mode or manner of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and making a part of this specification.

Steam-boilers are ordinarily kept supplied with water by means of a force-pump, the water being pumped directly into the boiler, and consequently the pump must be sufficiently large and powerful to force the water into the boiler, notwithstanding the pressure of the steam in the boiler; or, in other words, the force-pump must have a power exceeding the force or pressure of the steam in the boiler.

My invention has for its object such an apparatus or arrangement of mechanism that steam-boilers, whatever the pressure of the steam in them, can be supplied with water by means of any ordinary lift-pump or hydrant, and without the same being affected by the pressure of steam in the boiler.

Figure 1 is a view of an apparatus that shows the application and principle of my invention.

Figure 2 is a sectional view of the same.

The cylinder A is supposed to represent a vertical tubular boiler, having a grate, B, and fire-chamber in the lower end, and the products of combustion passing up through the tubes or pipes C, and off through a pipe opening from the top, or connected wherever desired.

D represents a supply-tank, or water-vessel, which may be placed in any convenient position near the boiler, and should be somewhat above the water-level in the boiler, and which is made capable of bearing a pressure equal to that of the boiler. This supply-tank D connects with the lower part of the boiler, by means of a tube, E, fitted with a tightly-closing valve, *a*, and also connects with the upper part or steam-chamber of the boiler, by means of a pipe, F, in which is also a steam-tight valve, *b*. There is no connection between the boiler and water-tank D, except through the valved tubes E and F.

Such vessel D also connects with any pump, or hydrant, or water-supply by means of the pipe G, in which is also a tightly-fitting valve, *c*, and such vessel has also a small air-valve, *d*. The valves *a* and *b* and *c* are also so arranged, or to be operated with respect to each other, so that when the two former, *a b*, are open, the valve *c* will be closed, and when the latter is open, the two former will be closed.

The action or operation of the apparatus is as follows:

The boiler is filled with water, in any convenient manner, and the valves *a* and *b* are closed. The valve *c* is then opened, and the tank or vessel D is easily filled from any hydrant or pump, as there is no pressure in it. When the tank D is first filled, the valve *d* is opened, so as to allow the escape of any air that may be in such tank.

When it is required to supply the boiler A from the tank D, the valve *c*, in the water-supply tube G, is closed, and the two valves, *a* and *b*, in the two tubes E and F, are opened. Equal pressure is at once established in both the tank D and the boiler A, and the water in the tank D, being higher than that in the boiler, flows by its own natural law into the boiler, and the required supply is obtained.

When the boiler has thus been supplied from the tank D, the valves *a* and *b* are closed, and the tank D thus relieved from all pressure. The valve *c* is again opened, when the tank D can be again filled with water, by any ordinary pump or hydrant. In filling the tank D, after the first time, the valve *d* will not need be opened, as the ingress of water into the tank through the pipe G will at once condense any steam in such tank, thereby producing a vacuum, and permitting the water to freely enter.

The rod *e* connects, by means of arms *f f f*, with the several valves *a b c*, and in such a manner that when such rod is in one position, as indicated by the heavy lines, the valves *a* and *b* are closed, and the valve *c* opened so that the tank D can be filled with water, and when moved to another position, as indicated by the dotted lines, the valves *a* and *b* are opened, establishing communication between the tank and boiler, and the other valve *c* is shut.

The supply-tank D may be made of any size desired, and the extent of the supply furnished by it to the boiler may be regulated as required by the closing of the valves *a* and *b*.

The water will pass from the tank D into the boiler, if there is a connection between the two by means of the small pipe E, but the operation will be more satisfactory by having also a connection between the tank, and the upper part of the boiler.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination and arrangement of the water-supply tank D, the valve-pipes E and F, and inlet-tube G, with the valves *a*, *b*, and *c*, substantially as described.

2. The arrangement of the rod *e* and connection-arms *f f f*, for simultaneously operating the several valves connected with the supply-tank D, substantially as set forth.

JOB A. DAVIS.

Witnesses:

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